



Flight Demonstration of Runway Incursion Prevention and Safety Enhancement Technologies

NASA is collaborating with the FAA to reduce the growing number of runway incursions. A joint flight test of NASA's Runway Incursion Prevention System (RIPS) technologies was conducted in October 2000 at the Dallas/Fort Worth International Airport. During the flight test, researchers evaluated the integration of the advanced surface surveillance infrastructure installed at DFW with newly developed airborne technologies.

Potential benefits to flight crews and airlines include:

- Runway incursion avoidance
- Supplemental guidance cues
- Increased situational awareness
- Low visibility surface navigation
- Reduced navigation errors
- Reduced taxi time
- Reduced controller/pilot miscommunications



NASA research aircraft flight deck.



NASA research aircraft landing at DFW.

System components

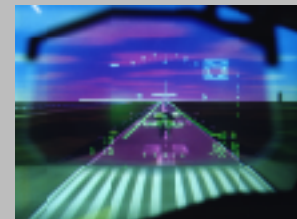
Airborne-

- Incursion Detection Algorithms
- Electronic Moving Map
- Head-Up Display
- Data Link Systems
- Local Area Augmentation System
- DGPS receiver

Ground-based-

- Surface Surveillance Systems including incursion detection
- Data Link Systems
- Controller Communications
- Traffic Display Tool
- Local Area Augmentation System

- Runway incursion alerting
- Boundary cones and centerline markings along assigned taxi path
- Turn indicators
- Textual location information



Symbology depicted on head-up display.

- Runway incursion alerting
- Airport layout
- Position and heading of equipped aircraft
- Locations and identification of surface traffic
- Air Traffic Control instructions including taxi route
- Occupied runway indication



Electronic moving map of airport depicted on aircraft's navigation display.

National Aeronautics and Space Administration • Federal Aviation Administration • Volpe National Transportation Systems Center • Rockwell Collins • Trios Associates • Jeppesen-Sanderson • Ohio University • Rannoch

